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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,938	10/31/2001	William B. Connors	10007153-1	4722
7590	01/27/2004		EXAMINER	
HEWLETT-PACKARD COMPANY			NGUYEN, JUDY	
Intellectual Property Administration			ART UNIT	PAPER NUMBER
P.O. Box 272400			2861	
Fort Collins, CO 80527-2400				

DATE MAILED: 01/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/003,938	CONNORS ET AL.
Examiner	Art Unit	
Judy Nguyen	2861	MW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 10 October 2003.
- 2a) This action is FINAL.                  2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-20 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 4/21/03 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)                  4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.  
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)                  5) Notice of Informal Patent Application (PTO-152)  
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.                  6) Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/10/03 has been entered.

### ***Drawings***

The proposed drawing correction and/or the proposed added sheet of drawing, filed on 4/21/03 has been disapproved because they introduce new matter into the drawings. 37 CFR 1.121(f) states that no amendment may introduce new matter into the disclosure of an application. The original disclosure does not support the showing of power 430 as illustrated in the newly added Figure 4B. Although the original disclosure also mentions and illustrates a separation barrier 408, resistor 112, and via 406, it does not describes or illustrates those elements as shown in the newly added Figure 4B. For example, the original Figure 4 illustrates the separation barrier 408 as a portion of layer 407 while newly added Figure 4B illustrates it as an empty space. Furthermore, the

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original Figure 4 illustrates the resistor 112 as a portion metal 407 while Figure 4B illustrates it by a box extended from the bottom of layer 407 to top of layer 400.

### ***Specification***

The amendments filed 4/21/03 and 10/10/03 are objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the description regarding to newly added Figure 4B including, but not limited to, the power source 430, similar to power source 130 of Fig. 1, which derives power from the power bus 128.

Applicant is required to cancel the new matter in the reply to this Office Action.

### ***Claim Objections***

Claims 7, 9, 11, 12, 13, 15, 17 are objected to because of the following informalities:

- Claims 7, 9, 11, 12, and 15: "the power bus" recited in each of the claims lacks proper antecedent basis.
- Claim 13: "the controller vias" lack proper antecedent basis.
- Claim 17: "the power via" (line 7) lacks proper antecedent basis. Previous recitation called for plural power vias.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11, 12, 15, 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 11 and 12, it is unclear where "the power bus" and "at least one power via" (see claim 11) come from and how they are inter-related with the features of claim 10, which claim 11 is depended therefrom. Claim 12 is depended on claim 11. Accordingly, claim 12 is also rejected under 112, second paragraph.

With respect to claim 15, it is unclear how a separation barrier recited in this claim is related with the one recited in claim 10, which this claim is depended therefrom.

With respect to claim 18: it is unclear whether "power vias" recited in this claim and the ones recited in claim 17, which claim 18 is depended therefrom, are one in the same.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 6, 7, 9, 10, 11, 12, 14, 15, 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kasamoto et al (US 6,056,391).

Kasamoto et al discloses all limitation of the claimed invention as follows:

- A metal stack formed within the circuit and comprised of a first metal layer [1110c + 1110b +1111] coupled to the power source and a second metal layer [1110a + 1103] having a portion that forms the resistors [1102].
- At least one power via [1105] including a separation barrier [the portion that filled the power via 1105] located adjacent the first metal layer and between the resistor and the power source/bus [the power source/bus is inherent because it is necessary for heating the resistors 1102].
- The first metal layer [1110c + 1110b +1111] is comprised of aluminum copper silicon [lower electrode layer 1110b made of aluminum and copper (see column 12, line 44); 1111 made of silicon (column 8, line 53)].

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- The second metal layer [1110a + 1103] comprised of aluminum [electrodes 1110a made of aluminum; see column 9, lines 4-6] and tantalum nitride [resistor layer 1103 made of tantalum nitride].
- Method claims are clearly anticipated the functions of the above mentioned elements of the claimed invention.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 8, 13, 17, 18, 19, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasamoto et al in view of Bohorquez et al (US 5,187,500).

Kasamoto et al discloses all features of the claimed invention except for the followings:

- A controller bus that is connected to controller vias that are connected to the resistors.

However, Bohorquez et al the followings:

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- A controller bus [119] that is connected to controller vias [117] that are connected to resistors [111].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Bohorquez et al in the teaching of Kasamoto et al for the purpose of selectively driving the resistors.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasamoto et al in view of Fasen et al (US 5,159,353).

Kasamoto et al discloses all features of the claimed invention except for the followings:

- The second metal layer [1110a + 1103] comprised of **tantalum aluminum**.

However, Fasen et al discloses the followings:

- A metal layer [182] comprised of conductive layer [181] preferably made of aluminum [column 10, lines 20-22] and resistive layer [180] **preferably** made of **tantalum aluminum**, although **tantalum nitride** may be used [column 9, lines 42-48].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the tantalum nitride resistor layer 1103 of the second

metal layer of Kasamoto et al with a tantalum aluminum resistor layer as taught by Fasen et al for the purpose of forming a print head with preferable material.

### ***Response to Arguments***

Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues that the specification has been amended to associate power 430 with power source 130 so that it is consistent with the original description. However, the original description does not describe any other power that similar to the power source 130 as amended.

Applicant argues that separation barrier 408 is shown in both figures as a bottom portion of metal layer 407 (shown with **dotted lines**) below power via 40, adjacent to substrate 409 and above metal 402. However, the original Figure 4 shows the barrier as portion of metal layer 407 **extended into layer 409 and touching layer 402**. The newly added Figure 4B shows the separation barrier (the **dotted lines** pointed out by applicant) only touching what appears like an opening of the layer 409. Figure 4B does show the portion of the metal layer 407 being extended into layer 409 as in the original Figure 4. Applicant further argues that Figure 4A (which is the original Figure 4) uses an arrow to depict an area of the second metal layer 404 above the substrate 409 and

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near the top metal layer 400. This is incorrect. The arrow depicts an area of layer 407 at the bottom of metal layer 400.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Judy Nguyen whose telephone number is (703) 305-7062 or (571) 272-2258 after 02/10/04. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (703) 308-4896 or (571) 272-2149 after 02/11/04. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
Judy Nguyen  
Primary Examiner  
January 23, 2004